61. The composition of claim 60, wherein the target polynucleotide is selected from the group consisting of genomic DNA, cDNA, messenger RNA (mRNA) and an oligonucleotide.

62. The composition of claim 59, wherein the nucleic acid is operatively linked to a vector.

63. The composition of claim 62, wherein the polynucleotide linked to the vector comprises a sense polynucleotide encoding a protein.

64. The composition of claim 62, wherein the polynucleotide linked to the vector comprises an anti-sense polynucleotide.

65. The composition of claim 62, wherein the vector is a liposome.

66. The composition of claim 62, wherein the vector is a virus.

67. The composition of claim 66, wherein the virus is selected from the group consisting of adenoviruses, adeno-associated viruses, herpes viruses and retroviruses.

68. The composition of claim 67, wherein the virus is a replication-defective adenovirus.

69. The composition of claim 68, where the replication-defective adenovirus comprises a promoter selected from the group consisting of a respiratory syncytial virus promoter, a cytomegalovirus promoter, an adenovirus major late protein (MLP), and VA1 pol III and β-actin promoters.

70. The composition of claim 69, wherein the replication-defective adenovirus comprises a promoter selected from the group consisting of a respiratory syncytial virus promoter and a cytomegalovirus promoter.

71. The composition of claim 62, wherein the vector is selected from the group consisting of pAd.RSV, pAd.MLP and pAd.VA1.

72. The composition of claim 62, wherein the vector is selected from the group consisting of Ad.RSV.αVEGF and Ad.VA1.αVEGF.

73. The composition of claim 62, wherein the vector further comprises a polyadenylation signal sequence.

74. The composition of claim 73, wherein the polyadenylation signal sequence comprises an SV40 signal sequence.

75. A composition, comprising a nucleic acid comprising a polynucleotide which is anti-sense to at least a portion of a polynucleotide encoding a vascular endothelial growth factor (VEGF), and a pharmaceutically-acceptable carrier.

76. The composition of claim 75, further comprising an adjuvant selected from the group consisting of adjuvants which increase cellular uptake.

77. The composition of claim 76, wherein the adjuvant is selected from the group consisting of hyaluronic acid and derivatives thereof.

78. The composition of claim 75, wherein the anti-sense polynucleotide has 100% complementarity to a portion of the gene encoding VEGF.

79. The composition of claim 75, wherein the anti-sense polynucleotide is 7 to 50 nucleotides long.

80. The composition of claim 79, wherein the anti-sense polynucleotide is 16 to 50 nucleotides long.

81. The composition of claim 80, wherein the anti-sense polynucleotide is up to 22 nucleotides long.

82. The composition of claim 81, wherein the anti-sense polynucleotide is up to 19 nucleotides long.

83. The composition of claim 75, wherein

the nucleic acid is operatively linked to a viral vector; and

the anti-sense polynucleotide is from about 20 nucleotides lomg to the full length of the sense polynucleotide encoding VEGF.

84. The composition of claim 83, further comprising an adjuvant.

85. The composition of claim 84, wherein the adjuvant is selected from the group consisting of hyaluronic acid and derivatives thereof.

86. The composition of claim 83, wherein the anti-sense polynucleotide is from about 50 nucleotides long to the full length sense polynucleotide encoding VEGF.

87. The composition of claim 83, wherein the sense polynucleotide encodes a VEGF selected from the group consisting of human retinal pigment epithelial cell VEGF and human choroidal endothelial cell VEGF.

88. A composition, comprising

a virus operatively linked to a nucleic acid comprising a polynucleotide which is complementary to a sense polynucleotide encoding at least a portion of a vascular endothelial growth factor (VEGF), the virus being capable of integrating the anti-sense polynucleotide into the genome of a target cell; and

a pharmaceutically-acceptable carrier.

89. The composition of claim 88, further comprising an adjuvant.

90. The composition of claim 89, wherein the adjuvant is selected from the group consisting of hyaluronic acid and derivatives thereof.

91. The composition of claim 88, wherein the virus is an adeno-associated virus.

92. The composition of claim 88, wherein the anti-sense polynucleotide is from about 20 nucleotides long to the full length VEGF-encoding sense polynucleotide.

93. The composition of claim 92, wherein the anti-sense polynucleotide is at least about 50 nucleotides long.

94. A method of treating a retinal disease associated with abnormal neovascularization, comprising administering a composition comprising an amount of a nucleic acid comprising a polynucleotide which is anti-sense to at least a portion of a sense polynucleotide encoding a vascular endothelial growth factor (VEGF) into the eye(s) of a subject in need of such treatment, effective to inhibit or reduce neovascularization.

95. The method of claim 94, wherein the composition further comprises an adjuvant.

96. The method of claim 95, wherein the adjuvant is selected from the group consisting of hyaluronic acid and derivatives thereof.

97. The method of claim 94, wherein the anti-sense polynucleotide is 7 to 50 nucleotides long.

98. The method of claim 97, wherein the anti-sense polynucleotide is at least 16 nucleotides long.

99. The method of claim 98, wherein the anti-sense polynucleotide is up to 22 nucleotides long.

100. A method of treating a retinal disease associated with abnormal neovascularization, comprising the acute administration to a subject in need of such treatment of the composition of claim 62 comprising an amount of the nucleic acid effective to inhibit or reduce abnormal neovascularization.

101. A long-term method of treating a retinal disease associated with abnormal neovascularization, comprising chronically administering to the eye(s) of a subject in need of such treatment the composition of claim 83 comprising an amount of the nucleic acid effective to inhibit or reduce neovascularization.

102. A long-term method of treating a retinal disease associated with abnormal neovascularization, comprising chronically administering the composition of claim 88 into the eye(s) of a subject in need of such treatment, comprising an amount of the nucleic acid effective to inhibit or reduce neovascularization.

103. The method of claim 94, wherein the retinal disease is selected from the group consisting of age-related macular degeneration, diabetic retinopathy, branch or central retinal vein occlusion, retinopathy of prematurity, rubeosis iridis and corneal neovascularization.

104. A method of promoting uptake of an exogenous nucleic acid by a target cell, comprising contacting a target cell with a nucleic acid or with a virus or vector operatively linked to the nucleic acid, in the presence of an adjuvant selected from the group consisting of hyaluronic acid and derivatives thereof.

A1 cont'd

105. The method of claim 104, wherein the target call is a phagocytic cell.

106. The method of claim 104, wherein the nucleic acid, the virus or the vector, and the adjuvant are contacted with the cell in vitro.

107. The method of claim 106, wherein the nucleic acid and the adjuvant are contacted with the cell in the form of a composition.

108. The method of claim 104, wherein the nucleic acid, the virus or the vector, and the adjuvant are administered to a subject in vivo.

109. The method of claim 108, wherein the nucleic acid, the virus or the vector, and the adjuvant are administered to the subject in the form of a composition.--